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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 10/625,~~456~~ 546

Confirmation No.: 8197

In re Application of:

Yutaka HIROSE et al.

Group Art Unit: 2811

Filed: July 24, 2003

Examiner: Nitin Parekh

For: CONTACT FORMATION METHOD AND SEMICONDUCTOR DEVICE

REQUEST FOR RECONSIDERATION

Commission for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants request reconsideration of the rejection in the Office Action mailed May 19, 2005 in view of the following remarks.

The rejection of claims 1 to 3 under 35 USC 103 as unpatentable over Herner et al. '147 in view of Nakamura et al. '512, newly cited, is respectfully traversed. The claimed invention is directed to a method permitting formation of an electrode film with a low resistance by having Si present in the vicinity of a Group III nitride semiconductor diffuse sufficiently as an n-type impurity into the semiconductor layer.

The Examiner in essence suggests that all of the steps of the instant claims are shown in the primary reference and cites the secondary reference for showing knowledge in the art that Si can be used as a dopant in an N-type GaN semiconductor layer. The references in combination do not teach or suggest the invention as claimed because the primary reference does not, contrary

to the suggestion made by the Examiner in the paragraph bridging pages 2 and 3 of the Office Action, show forming a film comprising Si and Ti on the surface of a layer of a Group III nitride semiconductor. Indeed, Fig. 3 of Herner et al. '147 shows a layer of Ti and a layer of Si on a polysilicon layer, not a layer of a Group III nitride semiconductor. As such, it is impossible in the primary reference method, for Si upon heat treating the film and semiconductor layer to diffuse as a dopant in the semiconductor layer. How can Si diffuse as a dopant into a layer that isn't there? The statements in the secondary reference do not overcome what is so woefully lacking in the primary reference.

Herner et al. '147 describes merely forming $TiSi_2$ in a silicon layer. The reference does not describe formation of a dopant by diffusing Si into GaN or some other Group III nitride semiconductor layer. The reference clearly does not teach or suggest what is claimed here. The general discussion at [0039] of Herner et al. '147 does not inform the artisan about Si dopant diffusion in a Group III nitride semiconductor. Such awareness comes only from applicants' specification which has been used improperly in hindsight to justify a position that cannot be supported by conclusions reached by a consideration of the prior art only. The discussion in the secondary reference regarding Si-doped Group III nitride semiconductors does not provide the disclosure necessary to a person of ordinary skill in art to make the changes required of the primary reference teachings to arrive at the instantly claimed invention. There is no teaching or awareness of what applicants do in either reference. The rejection accordingly should be withdrawn.

In view of the forgoing remarks, it is respectfully submitted that the application is in immediate condition for allowance. If the only barrier to allowance is the presence of non-

elected claim 4, the Examiner is authorized to cancel the claim for that express purpose. The Examiner is requested to telephone the undersigned if there should anything further be required in the case prior to allowance.

Respectfully submitted,

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Date: August 4, 2005

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Atty Docket: 28951.5294

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